

CLAIMS

What is claimed is:

1. A composite leaf spring comprising:
a forward leaf spring segment comprising an arcuate member extending therefrom;
a rearward leaf spring segment; and
a mounting segment intermediate said forward leaf spring segment and said rearward leaf spring segment.
2. The composite leaf spring as recited in claim 1, wherein said mounting segment comprising a tapering width and an expanding depth such that any cross-section perpendicular to the mounting segment and within said mounting segment provides a singular cross-sectional shape.
3. The composite leaf spring as recited in claim 2, wherein any cross-section taken perpendicular to the mounting segment and within said mounting segment defines a substantially equivalent cross-sectional area.
4. The composite leaf spring as recited in claim 1, wherein said forward leaf spring segment, said mounting segment and said rearward leaf spring segment define a non-linear member.
5. The composite leaf spring as recited in claim 1, wherein said arcuate member defines a hook.
6. The composite leaf spring as recited in claim 1, wherein said arcuate member defines a bend of at least ninety degrees to said mounting segment.
7. The composite leaf spring as recited in claim 1, wherein said forward leaf spring segment is thicker in depth than said rearward leaf spring segment.

8. A suspension system comprising:
 - a composite leaf spring comprising a forward leaf spring segment defining an arcuate segment, a rearward leaf spring segment, and a mounting segment intermediate said forward leaf spring segment and said rearward leaf spring segment; and
 - a forward attachment system comprising a retaining pin transverse to said composite leaf spring and engaged with said arcuate segment.
9. The suspension system as recited in claim 8, wherein said retaining pin comprises a shank at least partially surrounded by a resilient tube.
10. The suspension system as recited in claim 8, wherein said retaining pin comprises a threaded fastener.
11. The suspension system as recited in claim 8, wherein said retaining pin engages an inner arc of said arcuate segment.
12. The suspension system as recited in claim 11, further comprising a bumper engaged with an outer arc of said arcuate segment to trap said arcuate segment therebetween.
13. The suspension system as recited in claim 13, wherein said bumper comprises an arcuate surface engaged with said outer arc of said arcuate segment.
14. The suspension system as recited in claim 13, wherein said bumper comprises a serpentine surface engaged to a complimentary fixed serpentine surface opposite said arcuate segment.
15. The suspension system as recited in claim 8, further comprising tubular resilient member molded to said an inner arc of said arcuate segment.

16. The suspension system as recited in claim 8, further comprising a C-shaped bracket to retain said retaining pin.

17. A suspension system comprising:

a composite leaf spring comprising a forward leaf spring segment defining an arcuate segment, a rearward leaf spring segment, and a mounting segment intermediate said forward leaf spring segment and said rearward leaf spring segment;
a bracket defining a bracket opening to receive said arcuate segment; and
a retaining pin attached to said bracket transverse to said composite leaf spring and across said opening to engage an inner arc of said arcuate segment.

18. The suspension system as recited in claim 17, wherein said retaining pin comprises a threaded fastener at least partially surrounded by a resilient tube.

19. The suspension system as recited in claim 17, further comprising a bumper retained within said bracket and engaged with an outer arc of said arcuate segment to trap said arcuate segment between said bumper and said retaining pin.

20. The suspension system as recited in claim 19, wherein said bumper comprises a serpentine surface engaged to a complimentary fixed serpentine surface of said bracket.

21. A method of mounting a composite leaf spring to a forward attachment system mounted to a vehicle mainframe comprising the steps of:

- (1) forming an arcuate segment as an end of a composite leaf spring;
- (2) trapping said arcuate segment between a first retainer and a second retainer transverse to said arcuate segment.

22. A method as recited in claim 21, wherein said step (2) comprises trapping said arcuate segment between a retaining pin and a fixed bracket wall.

23. A method as recited in claim 21, wherein step (2) further comprises

- (a) overmolding a resilient tubular material to an inner arc of said arcuate segment; and
- (b) fastening the first retainer through the resilient tubular member.